The State of New Hampshire
Department of Environmental Services

Michael P. Nolin
Commissioner

July 30, 2004
Letter of Deficiency
DSP#04-027

Mr. Scott Bryer
Selectmen
Town of Northwood
818 First NH Turnpike
Northwood, NH 03261

RE: Conservation Pond Dam #183.12 (a.k.a. Gulch Mountain Pond Dam), Northwood

Dear Mr. Bryer:

The Department of Environmental Services, Dam Bureau (DES) consistently strives to enhance the safety of dams in New Hampshire through its dam safety program. One of the many instruments that play a part in reaching this goal is our inspection program. DES is forwarding this correspondence to you to advise you that in accordance with RSA 482:12 and Env-Wr 502.02, an inspection of the subject dam was conducted on June 5, 2004. During this visual inspection and/or file review, the following deficiencies were observed:

1. The upstream and downstream faces over the entire length of the dam were overgrown with trees and brush;

2. There was notable seepage at the toe of the dam, to the right of the low level outlet;

3. The interior of the CMP outlet pipe is so badly corroded that the surrounding soil on the exterior of the pipe along the water line is visible;

4. The drop inlet has a 2' steel extension pipe that was added without DES authorization. This extension serves to raise the water level during a flood event. Currently flow discharges between the sleeve and the original drop inlet crest due to corrosion. The dam can pass the routed 100 year storm event with this sleeve in place, however Cole Road which serves as an emergency spillway will be overtopped by 0.7';

5. There is no operation and maintenance plan (O&M) on file with DES; and

6. There is no Emergency Action Plan (EAP).

DES believes that the above deficiencies can be corrected by performing the following items by the indicated schedule:

<u>October 1, 2004</u>:

1. Prepare and submit to the DES a written O&M plan. The plan should describe the control of impoundment levels, monitoring and maintenance procedures, and identify emergency contact personnel. Refer to the enclosed guidelines;

December 30, 2004:

2. Remove trees and brush from the upstream and downstream faces of the dam. Notify property owners prior to removing trees along the downstream face of the dam;

3. Remove the unauthorized 2' extension on the drop inlet;

February 1, 2005:

4. Provide evidence to DES that a professional engineer has been retained by the town to perform the following tasks:
    a. Complete a full dam safety inspection of the dam, emergency spillway and all outlet works. This inspection would be carried out after the completion of items 2 & 3, above;
    b. Provide a detailed assessment of the dam to DES for review. This assessment should include recommendations for repairs to return or ensure that the dam may be operated in a safe condition. NHDES dredge and fill and dam reconstruction permits may be required for this work;
    c. Complete a dam breach analysis and submit a draft EAP to DES for review. Contact Bethann McCarthy, DES EAP Coordinator, for guidance;

December 30, 2005:

5. Complete the EAP plan; and

6. Complete repairs to the dam in accordance with the requirements resulting from item 4b., above.

In lieu of the above referenced deficiencies you may research the benefits of removing the dam. If this is an option that you are interested in you can contact Ms. Stephanie Lindloff, DES River Restoration Coordinator at 603-271-3406.

As a result of this inspection DES has reclassified this dam. The hazard classification has been changed from a low hazard A to a significant hazard B structure. A downstream field survey was performed in 1992 as a result of a reported washout to homes downstream of the dam. Heavy rainfall in combination with a clogged drop inlet resulted in approximately 15 cfs discharging through the emergency spillway. This flow crossed the first downstream crossing, at mile 0.15 through an 18" CMP culvert with an invert 3' below the top of the road. No overtopping of this dirt roadway occurred. Further downstream at mile 0.3, a second road crossing with an 18" CMP mated to a 15" clay pipe could not handle the flow. The road was overtopped and property damage caused by erosion occurred to several residences.

A simple dambreak analysis was performed using the software SMPDBK. The breach flow was calculated to be 3600 cfs during the design storm event. The model predicted that in the event of a dam breach during both the 50-year and 100-year storm events, two downstream road crossings would be overtopped by over 2 feet of water. Residences downstream of the second road crossing would be affected by this flooding. The sill elevation of one cottage, in particular, was estimated to be 5 feet below the top of road elevation. During the 1992 flooding incident, water flowed through the crawl space of this cottage. Due to the possibility of downstream flooding of residences and economic damage due to erosion the hazard classification of significant hazard, Class B, is justified for this structure. Due to the

change in hazard classification the inspection of this dam will be conducted every 4 years and the Annual Dam Registration Fee will be $300 year. The next scheduled inspection of this dam will be in 2008.

DES is requesting that you complete and submit the attached "Intent to Complete Repairs" form, within 30 days of receipt of this letter, that will provide for correction of the identified deficiencies by the date(s) indicated above. Please call or write to our office if the repairs are completed ahead of the aforementioned schedule so that DES may schedule a follow-up inspection. Unless notified otherwise, DES will conduct the follow-up inspection on or after the date(s) indicated above. If you believe changes to the items of work or dates are necessary, please make the changes directly on the form and provide a brief explanation. We have enclosed a self addressed stamped envelope for you to return this form.

Our intent in sending you this correspondence is to make you aware of items that DES believes warrant your attention to insure the continued safe operation of your dam. It is our hope that, through the submittal of the attached form and a commitment to keeping a well-maintained dam, you will voluntarily comply with the requested items of work. If we do not receive the intent form or a similarly adequate written reply, we will assume that you are in agreement with our findings and recommendations and DES will carry out follow-up inspections accordingly.

If you have any questions or comments regarding this Letter of Deficiency or would like our presence at a selectmen's meeting to further explain the contents of this letter, please contact me at 271-3406, or write to the Water Division at the address listed on the bottom of the cover page.

Sincerely,

COPY

Grace E. Levergood, P.E.
Dam Safety Engineer

Attachments Guideline for an O&M plan, DB8, DB13, sketch
cc: Gretchen R. Hamel, Legal Unit Administrator ✓
Bethann McCarthy, EAP Coordinator
Stephanie Lindloff, River Restoration Coordinator
Certified # 7000 1670 0000 0588 5410
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